

# Missouri Department of Natural Resources Total Maximum Daily Load Information Sheet

## Howell Creek

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### Waterbody Segment at a Glance:

**County:** Howell  
**Nearby City:** West Plains  
**Length of Impairment:** 0.3 miles  
**Pollutant:** Chlorine  
**Source:** West Plains  
Wastewater Treatment  
Plant (WWTP)



State map showing location of watershed

**TMDL Priority Ranking:** TMDL Approved 2001

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### Description of the Problem

#### Beneficial uses of Howell Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption

#### Use that is impaired

- Protection of Warm Water Aquatic Life

#### Standards that apply

- The specific criteria (standards) for chlorine are found in Missouri's Water Quality Standards (WQS), 10 CSR 20-7.031 Table A, page 17. The standard is 0.01 milligrams per liter (mg/L or parts per million), expressed as total residual chlorine (TRC).

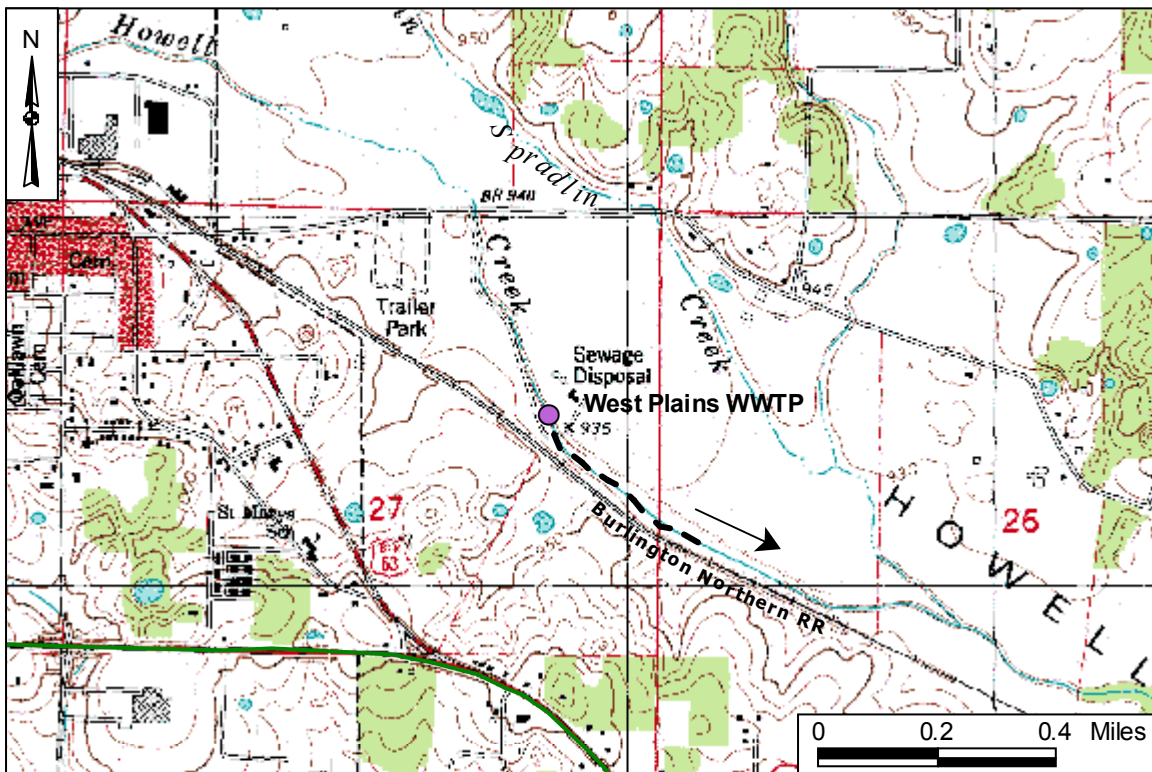
### Background Information

The effluent (discharged water) from the West Plains Wastewater Treatment Plant (WWTP) dominates Howell Creek when water levels are low. Low flow conditions in Missouri usually occur during late summer and early fall, when rain is less frequent. Also, Howell Creek is a losing stream, meaning that it loses much or all of its flow to the groundwater system. The plant has a chlorination requirement to disinfect its discharge, as dictated by the WQS, because it discharges to a losing stream and because it discharges directly into the upper reach of a classified stream. Chlorine is highly toxic and its presence in the stream under low flow conditions can kill not only aquatic invertebrates and fish but also algae and other aquatic plants.

During a low flow survey of Howell Creek in 1993, Department of Natural Resources staff detected a chlorine odor, sewage sludge deposits and an absence of any aquatic life below the WWTP outfall. Experience shows that when an odor of chlorine is present, there is more than enough chlorine to cause toxicity in the stream. Though usually rocks are bleached in the presence of too much chlorine, any bleaching in this case was masked by the presence of the sludge. Additionally, there was no aquatic life immediately below the outfall and reduced benthic diversity further downstream. Based on these observations, 0.3 mile of the stream was judged to be impaired due to chlorine toxicity.

The Howell Creek TMDL was approved by the U.S. Environmental Protection Agency Jan. 31, 2001. It calls for the West Plains WWTP to perform dechlorination (a process used to remove chlorine) of the effluent before it is discharged to the creek. This will help to ensure protection for the aquatic life in Howell Creek. The permit was revised to include a chlorine limit of 0.01 mg/L to ensure the dechlorination is effective, as well as quarterly monitoring of the discharge for the chlorine limit. The permit was reissued November 2001 and the 0.01 mg/L limit for total residual chlorine became effective May 2003.

### West Plains WWTP and Impaired Segment of Howell Creek in Howell County, Missouri



----- Impaired segment      → Direction of flow

Contact information next page.

**For more information call or write:**

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